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# 1974 OHIO POTATO CULTIVAR TRIALS

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DEPARTMENT OF HORTICULTURE

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
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# OHIO POTATO CULTIVAR TRIALS, 1974

A. R. Mosley, E. C. Wittmeyer[1], R. C. Rowe[2] and F. I. Lower[3]

## INTRODUCTION

Each year 30 to 40 potato varieties and advanced selections are tested in Ohio. In 1974, plots were located on 7 grower farms, and at the Muck Crops Branch, Celeryville. Tests were divided into the following 3 groups based on soil types, cropping season and location: (1) Statewide trials--8 named varieties were tested on 6 cooperating grower farms and 20 observational lots on 2 farms; (2) Marietta trials--12 varieties were tested for late summer cropping potential on a grower farm near Marietta in southeastern Ohio; and (3) Muck trials--7 varieties were tested on organic soil at the Muck Crops Branch, Celeryville.

## STATEWIDE TRIALS

### Procedure

Eight varieties were tested on 6 grower farms (Table 1). Superior was included for comparison with early varieties and Katahdin, for late-maturing entries. An additional twenty observational selections were included on farms 3 and 5. The crops were grown using methods common to the area. To insure typical commercial pest control and cultural practices, plots were located in or adjacent to commercial fields in each instance. Production methods varied widely from farm to farm (Table 2). Seedpiece spacing ranged from 8 to 12 inches; planting dates, from April 23 to May 28. Plot size was consistent for all grower locations--double 50-foot rows for major varieties and double 25-foot rows for observational entries. Seed were planted by machine. All entries were replicated at least 3 times at each location. Mositure was adequate during Spring and early Summer, somewhat dry in late July and August, and adequate to excessive during the remainder of the season.

Stand, vigor and the incidence and severity of disease were evaluated during the growing season. Tubers were dug by level-bed digger, picked up by hand, and weighed in the field to determine total yields. A 50-lb. sub-sample of the yield from each plot was then taken for grading, sizing and examination for hollow heart and other tuber disorders. Fifteen-lb. samples were collected from each plot for major varieties and at least one plot for promising observational entries for chip tests in the Horticultural Pilot Plant at Columbus; results will be published under separate cover.

### Results

Yield.--Hudson again led all varieties in average marketable yield, as in past years, with 396 cwt. per acre across all locations (Table 4). Kennebec, Shurchip, and Katahdin each yielded over 300 cwt. while Norchip, Penn 71, Superior, and Abnaki yielded 297, 293, 266 and 260 cwt. per acre, respectively. In 1973, Kennebec and Katahdin yielded relatively less in comparison to the earlier-maturing varieties (Table 5). It appears that yield of Superior, Norchip and Abnaki were more adversely affected by dry weather in July and August than the later varieties. Despite excellent yields in past years, Abnaki produced only 260 cwt. in 1974, the lowest of all entries.

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TABLE 1.--Sources, Origin and Characteristics of Entries, Ohio Potato Cultivar Trials, 1974.

| Cultivar | Origin | Years in Ohio Tests | Resistant or Tolerant to: | Comments |
|---|---|---|---|---|
| | | | STATEWIDE PLOTS(1) | |
| Superior | Wisc., 1961 | 12 | Scab, late blight, Air-pollution. | Standard early var. in Ohio. All-purpose. |
| Penn 71 | Pa., 1972 | 3 | Late blight. Susc. V. wilt. | Med. yields. Sometimes rgh. shape. Lge. tubers. |
| Abnaki | USDA, Me. & N.Y., 1971 | 4 | V. wilt, leaf roll, mild mos. Susc. late b. | Gen. hi. yields. Large tubers. Susc. hollow heart. |
| Norchip | N.D., 1968 | 7 | Scab, some insects. | Sets heavily; good chipper. Medium yields. |
| Shurchip | Nebr., 1968 | 7 | Scab; tol. to V. and F wilts. Susc. to late b. | Hi. yields; attractive. Not a dependable chipper. |
| Kennebec | USDA, 1948 | 8 | Late blight, net nec., mosaics. | Good chipper. Hi. yields. Lge. tubers. Susc. greening, rots. All-purpose. |
| Katahdin | USDA, 1935 | 12 | Leaf roll, mosaic, net nec. | Std. Ohio var. Susc. greening. All-purpose. Widely adapted. |
| Hudson | N.Y., 1973 | 5 | Golden nem. Susc. late blight. | Hi. yields. Large tubers. Table use. |
| | | | OTHER | |
| Targhee | Idaho & USDA 1973 | 1 | Scab | Long rus. Hi. solids. Late. Norgold in Ped. Better than Nampa. May cook dark. |
| W 623 | Wisc. | 2 | | Hi. yields in NCR trials in '72 & '73. Chips from storage. Hi. solids. |
| W 710 | Wisc. | 2 | | Good yields in Wisc.; Att.; low solids. Poor chip color. |
| W 718 | Wisc. | 2 | | High yields. |

TABLE 1.--Sources, Origin and Characteristics of Entries, Ohio Potato Cultivar Trials, 1974. (cont.)

| Cultivar | Origin | Years in Ohio Tests | Resistant or Tolerant to: | Comments |
|---|---|---|---|---|
| W 729 R | Wisc. | 1 | | Red. Med. to late yields. |
| LA 71-110 | La. | 2 | | Good grades; fair yields; chips. |
| Belleisle (F58010) | New Brunswick | 1 | Bruising | Late. Uniform, high yields. Boils & bakes. |
| F 61025 | New Brunswick | 1 | Vert. wilt, leaf roll. | Midseason. Hi. yields. Chips. Sizes early. Boils & bakes. |
| LA 71-82 | La. | 1 | | |
| 6 RF 1 | Pa. | | | Late |
| York | Canada, 1969 | 4 | Late blight, scab, silver scurf. | Very early; high solids; att. russet; susc. rhizoc. Low yields. For organic soils. |
| Norland | N.D., 1957 | 3 | Common scab. (moderate) | Susc. viruses, late b. small red; low sp.g. Very early. |
| Seminole | Frito Lay, 1970 | 5 | Mild mos. (mod.) V. wilt (mod.) | Shal. eyes, pink. Chips High sp.g. Adapted to South. |
| Anoka | Minn., 1964 | 4 | Scab (mod.), late blight. | Av. yields, good grades. Chips. Early. High sp.g. Heavy set. |
| Wischip (W629) | Wisc., 1974 | 2 | Tol. to scab. Susc. | Rd. white, chips. Low sp.g. High Susc. to late blight. |
| 6 CX 6 | Penn. | 3 | | High sp.g.; susc. drought; slight russet. Sim. Norchip. |
| NC 64 C2 | N.C. | 1 | | |
| ND 6634-2R | N.D. | 1 | | Fair chipper. Red |

TABLE 1.--Sources, Origin and Characteristics of Entries, Ohio Potato Cultivar Trials, 1974. (cont.)

| Cultivar | Origin | Years in Ohio Tests | Resistant or Tolerant to: | Comments |
|---|---|---|---|---|
| Nampa | Idaho, 1973 | 1 | Common Scab | Fair Chipper. Rd-Long russet. High sp.g. Some off shape. Norgold in Ped. |
| Snowchip | USDA & Alaska 1974 | 1 | | Chips. High solids. Shallow eyes. Ex. tops. |
| Alaska Frostless | Alaska | 1 | Frost | Tough skin. |
| Alaska Russet | Alaska | 2 | | Russet, susc. scab & shatter bruise. Stores well. |

(1) Statewide Entries Ranked by Approximate order of Maturity. Cultivars are characterized further on pp. 18 & 19.

TABLE 2.--Cultural and Pest Control Measures by Farm, Ohio Potato Variety Trials, 1974.

| Cultural Practice | Farm No. 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Planted | April 23 | April 25 | May 1 | May 11 | May 27 | May 28 |
| Killed | August 24 Sinox PE & oil | Not Killed Shredded 9/7 | Sept. 3 Dow Gen. | Sept. 23 Frost | Sept. 23 Premerge | Sept. 10 Evik |
| Harvested | Sept. 13 | Sept. 7 | Sept. 11 | Oct. 18 | Oct. 2 | Sept. 28 |
| Days to Killing | 123 | 135 | 125 | 125 | 119 | 110 |
| Days to Harvest | 143 | 135 | 133 | 150 | 128 | 138 |
| 1973 Crop | Wheat | Peppers | Wheat | Corn | Potatoes | Wheat |
| Cover Crop | Stubble & Straw | Rye | Clover & Timothy | None | None | Brome Grass |
| Fertilizer/A Broadcast | 150 lbs.Urea 250 lbs.12-24-24 | ---- | 40 lbs. N | ---- | ---- | 200 lbs. Am. nitrate |
| In-Row | 500 lbs. 12-24-24 | 1300 lbs. 14-14-14 | 1000 lbs. 10-20-20 | 1200 lbs. 17-17-17 | 1000 lbs. 10-20-20 | 1000 lbs. 8-32-16 |
| Herbicide/A | 40-50 lbs. 10% Eptam | 4 lbs.Lorox ½ 2 lbs.Sencor½ | 1 gal. Eptam | Lorox | 50 lbs. Eptam | Lorox |
| Syst. Insect | Di-Syston | Thimet Di-Syston | Thimet | Di-Syston | Di-Syston | Di-Syston |
| Seed Spacing | 9.5 x 34 | 12 x 36 | 8.5 x 36 | 10 x 34 | 11 x 34 | 8 x 32 |
| Irrigation | 1-July 17 | None | None | None | None | None |
| Soil Type | Sandy Silt Loam | Sandy Loam | Silt Loam | Silt Loam | Wooster Silt Loam | Chile Silt Loam |

TABLE 3.--Soil Test Results, Ohio Potato Variety Trials, 1974

| Location | pH | LTI | Pounds Per Acre | | | | | | | | % Base Sat. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | P | K | Ca | Mg | $NO_3$ | Mn | Zn | B | Ca | Mg | K | CEC | SS | OM |
| 1 | 5.7 | 67 | 95 | 348 | 2015 | 262 | 13 | 106 | 21 | 1.3 | 53 | 11 | 4.7 | 9 | 12 | 2.2 |
| 2 | 5.0 | 65 | 110 | 256 | 1710 | 179 | 24 | 49 | 10 | 1.1 | 37 | 6 | 2.9 | 11 | 14 | 3.9 |
| 3 | 5.9 | 67 | 109 | 422 | 1605 | 409 | 21 | 73 | 19 | 1.3 | 43 | 18 | 5.9 | 9 | 13 | 2.8 |
| 4 | 4.7 | 63 | 101 | 563 | 1480 | 276 | 74 | 163 | 23 | 2.0 | 26 | 8 | 5.2 | 14 | 28 | 2.2 |
| 5 | 5.0 | 65 | 127 | 256 | 1735 | 130 | 21 | 76 | 17 | 1.6 | 38 | 4 | 2.9 | 10 | 16 | 2.6 |
| 6 | 5.9 | 67 | 108 | 320 | 2650 | 470 | 32 | 110 | 18 | 1.9 | 52 | 15 | 3.3 | 12 | 20 | 2.7 |
| Marietta | 4.7 | 58 | 164 | 496 | 965 | 144 | 12 | 113 | 17 | 3.2 | 13 | 3 | 3.6 | 17 | 22 | 3.0 |
| Celeryville | 5.0 | 51 | 135 | 865 | 9830 | 1659 | 95 | 18 | 88 | 4.7 | 44 | 12 | 2.0 | 55 | 44 | 81.0 |

LTI -- Lime Test Index
CEC -- Cation Exchange Capacity
SS -- Soluble Salts
OM -- Percent Organic Matter

TABLE 4.--Average Marketable Yields in Cwt. per Acre, Ohio Potato Variety Trials, 1974.

| Cultivar | Farm No. 1 | 2 | 3 | 4 | 5 | 6 | Average |
|---|---|---|---|---|---|---|---|
| Hudson | 447 | 237 | 342 | 350 | 461 | 538 | 396 |
| Kennebec | 378 | 210 | 329 | 435 | 337 | 485 | 362 |
| Shurchip | 341 | 142 | 271 | 360 | 330 | 385 | 305 |
| Katahdin | 299 | 197 | 337 | 350 | 260 | 367 | 301 |
| Norchip | 304 | 145 | 247 | 385 | 281 | 418 | 297 |
| Penn 71 | 255 | 129 | 294 | 374 | 329 | 378 | 293 |
| Superior | 283 | 183 | 216 | 243 | 303 | 331 | 266 |
| Abnaki | 364 | 136 | 281 | --- | --- | --- | 260 |
| Average | 334 | 172 | 290 | 357 | 329 | 415 | |
| LSD .05 | | | | 26.6 | | | 30.7 |

TABLE 5.--Average U.S. No. 1 Yields for Varieties Grown in 1974 and For 2 or More Years In 10 Years of Testing, Ohio Potato Variety Trials, 1974

| Variety | Years Tested 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Early** | | | | | | | | | | | |
| Haig | ---- | 204 | 254 | 233 | ---- | ---- | 310 | 296 | ---- | ---- | 259 |
| Alamo | ---- | ---- | ---- | 298 | 286 | 308 | 277 | ---- | ---- | ---- | 292 |
| Superior | 289 | 255 | 283 | 269 | 308 | 269 | 275 | 228 | 287 | 266 | 273 |
| Iopride | ---- | ---- | ---- | ---- | ---- | 321 | 302 | ---- | ---- | ---- | 312 |
| **Medium Early** | | | | | | | | | | | |
| Snowflake | 285 | 195 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 240 |
| Norgold Russet | 259 | 221 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 240 |
| LaChipper | 326 | 285 | 325 | 272 | 301 | ---- | ---- | ---- | ---- | ---- | 302 |
| Platte | ---- | ---- | 315 | 273 | 302 | ---- | ---- | ---- | ---- | ---- | 297 |
| Monona | ---- | 229 | 288 | 231 | 284 | 274 | 300 | ---- | ---- | ---- | 268 |
| Wauseon | ---- | ---- | ---- | ---- | ---- | 297 | 270 | ---- | ---- | ---- | 284 |
| Abnaki | ---- | ---- | ---- | ---- | ---- | ---- | 319 | 297 | 291 | 260 | 292 |
| **Midseason** | | | | | | | | | | | |
| Peconic | ---- | ---- | ---- | 305 | 297 | 349 | 290 | ---- | ---- | ---- | 267 |
| Arenac | 332 | 202 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 311 |
| Penobscott | ---- | 222 | ---- | 307 | 425 | ---- | ---- | ---- | ---- | ---- | 318 |
| Shurchip | ---- | ---- | ---- | ---- | 385 | 282 | 335 | 304 | 310 | 305 | 320 |
| Norchip | ---- | ---- | ---- | 307 | 282 | 355 | 294 | 284 | 292 | 297 | 302 |
| Hudson (NY 41) | ---- | ---- | ---- | ---- | ---- | ---- | 347 | 352 | 342 | 396 | 359 |
| Katahdin | 405 | 270 | 327 | 284 | 290 | 344 | 285 | 277 | 283 | 301 | 307 |
| Kennebec | 394 | 290 | 286 | ---- | ---- | ---- | ---- | 285 | 280 | 362 | 316 |
| Lenape | ---- | ---- | 326 | 263 | 274 | ---- | ---- | ---- | ---- | ---- | 288 |
| Penn 71 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 268 | 293 | 281 |
| **Late** | | | | | | | | | | | |
| Sebago | 374 | 225 | 299 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 296 |
| ONA | 402 | 234 | 350 | 319 | ---- | ---- | ---- | ---- | ---- | ---- | 326 |

Yields differed significantly among farms. Plots on Farm No. 2 were situated on a light, sandy soil and were not irrigated; therefore, yields were cut to an average yield of only 172 cwt. per acre by drought in July and August. Yields for Farm No. 6 may have been slightly inflated due to the extremely wet harvest conditions and mud on the tubers.

Grade.--Earlier-maturing varieties produced very slightly better grades than later types in 1974 (Table 6). Superior graded almost 92 percent U.S. No. 1 potatoes followed by Abnaki with 91.3 percent. All other entries produced less than 90 percent marketable potatoes; Kennebec graded only 82.5 percent marketable. Lower grades among the late-maturing varieties were due largely to off-shapes, sun-greening, and rots.

Tuber size, ranged from 0.51 lbs. per tuber for Hudson to only 0.31 lbs. for Norchip (Table 6). Kennebec, Katahdin, and Penn 71 also produced large tubers averaging almost 1/2 lb. each.

Percent Stand.--Percent stand varied significantly among varieties (Table 6). However, stand count did not appear to affect yield greatly since the low-yielding Abnaki produced a 94 percent stand. Stands were generally acceptable for most varieties in 1974 ranging from 88 to 94 percent.

Observational Selections

Several of the observational selections appear to be promising (Table 7); however, data are based on small plots at only one or two locations and may be misleading. Yields ranged from 493 cwt/acre of marketable potatoes for 6RF1 to only 168 cwt. for Alaska Frostless. Several selections produced over 350 cwt.; most of these will be tested further in 1975. 6RF1 may be too late for Ohio in most years despite excellent performance in 1974. Snowchip is said to chip well from cold storage; based on these reports and high yields, it may hold some promise for Ohio. 6CX6, W 710, W 718, La 71-110, and Belleisle also showed considerable promise in 1974, as did the Idaho russets Nampa and Targhee. NC64C2, La 71-82, F61025, and all others yielding less than 275 cwt. per acre in 1974 will probably be dropped from further testing in Ohio.

TABLE 6.--Grade, Specific Gravity, Average Tuber Weight, Major Defects and Percent Stand, Ohio Potato Variety Trials, 1974

| Cultivar | Average Percent | | | Avg. Tuber Wt.,lbs. | Major Defects | Percent Stand |
|---|---|---|---|---|---|---|
| | Marketable | B-Size | Culls | | | |
| Hudson | 87.3 | 1.5 | 11.6 | 0.51 | Sh, Gr, Rots | 90 |
| Kennebec | 82.5 | 3.0 | 14.5 | 0.47 | Sh, Gr. | 89 |
| Shurchip | 88.1 | 5.2 | 6.7 | 0.32 | Sh, Gr. | 94 |
| Katahdin | 89.3 | 4.9 | 5.7 | 0.48 | Sh, Gr. | 91 |
| Norchip | 87.5 | 6.7 | 5.9 | 0.31 | Sh, Gr, Cr. | 88 |
| Penn 71 | 87.8 | 4.3 | 7.9 | 0.45 | Sh, Gr. | 88 |
| Superior | 91.9 | 3.5 | 4.7 | 0.35 | Sh, Rot | 91 |
| Abnaki | 91.3 | 4.2 | 4.4 | 0.39 | Sh. | 94 |
| LSD .05 Level | 1.2 | 0.9 | 0.7 | --- | -------- | 3.1 |

TABLE 7.--Marketable Yield, Grade, Percent Stand and Comments on Observational Selections, Ohio Potato Variety Trials, 1974

| Selection | Yield Cwt/A | Percent Marketable | Plans for 1975 | Percent Stand | Season of Maturity | Comments |
|---|---|---|---|---|---|---|
| 6RF1 | 493 | 87.3 | cont. | 80 | Late | Lge. Rgh. Sh. Shal. eyes. Res't late blight? |
| Snowchip | 466 | 86.8 | cont. | 96 | Late | Good Skin. Fairly att. Deep bud end Med-lge. |
| 6CX6 | 422 | 91.0 | cont. | 90 | Mid-Late | Buff.skin. Sh. eyes. Att. Promising. Susc. Shat. bruise? |
| W 729 R | 388 | 91.0 | cont. | 84 | Midseason | Purple-red. Good color. Sh. eyes. Lge, rgh. shape. Some rot. |
| W 710 | 386 | 91.6 | cont. | 87 | Med. early | Att. Good skin, netted, creamy, tan. Sh. ends. Some wilt. |
| W 718 | 384 | 90.6 | cont. | 73 | Midseason | Lge, att. Sh. eyes. Some scab. Some wilt. Many culls. |
| NC 64 C2 | 375 | 88.2 | Drop | 79 | Midseason | Very white. Heavy set, many B's. Deep eyes. Not promising. |
| Nampa | 370 | 82.5 | cont. | 95 | Late | Long, dark russ. Att. Some rgh. sh. Res't late blight? |
| La 71-110 | 364 | 87.5 | cont. | 73 | Midseason | Burbank type. Att. Some wilt. |
| La 71-82 | 360 | 81.1 | Doubtful | 70 | Mid-late | Long, blocky. Too lge. Variable size and shape. Lge. lent. Questionable. |
| Belleisle | 358 | 80.3 | cont. | 64 | Late | Tan. Rgh, many culls. Variable size. Med. size. Less blight? |
| F 61025 | 339 | 91.0 | Drop | 74 | Midseason | Pink eyes. Tan. Med. size. Deep bud end. Doubtful. |
| Targhee | 328 | 85.6 | cont. | 86 | Late | Long russ. Dark, att. Smooth. Some lge. lent. |
| W 623 | 268 | 90.7 | Doubtful | 72 | Early-mid | Small, var. size. Smooth, tan. Some wilt. High solids. Chips. |
| Seminole | 238 | 89.6 | Drop | 82 | Early | White. Pink eyes. Some lge. lent. Some leaf roll, wilt. Doubtful. |
| Anoka | 236 | 89.7 | Drop | 86 | Late | Good shape. Too small, low yields. Leaf roll and wilt. Doubtful. |
| ND 6634-2R | 227 | 92.7 | Drop | 73 | Med. Early | Purple-red. Good color. Small. Leafroll. Less blight. Sh. eyes. Doubtful. |
| Wischip | 181 | 86.6 | Drop | 91 | Med. Early | Good sh; too small. Leafroll, wilt. Ext. susc. lat blight. Doubtful. |
| Norland | 176 | 95.2 | Drop | 82 | Very Early | Ex. red. Att. Too small, low yields. Doubtful. |
| Alaska Frostless | 168 | 87.4 | Doubtful | 93 | Med. Early | Yields too low. Doubtful. |

## MARIETTA EARLY MARKET TRIALS

Commercial potato production in southeastern Ohio is geared primarily toward early fresh market outlets. Fields are planted in April and harvested during late July and early August. To aid growers in that area and similar locations in Ohio, twelve named potato varieties were tested for late summer cropping potential on a grower farm near Marietta in 1974. In approximate order of maturity, varieties included were:

| | |
|---|---|
| Early | Wischip |
| Superior | Seminole |
| Norland | Penn 71 |
| Midseason | Midseason-to-Late |
| Norchip | Kennebec |
| Abnaki | Katahdin |
| Shurchip | |
| Anoka | |

Varieties are described briefly in Table 1. Superior was used for comparison with early varieties and Katahdin for midseason to late varieties.

### Procedure

Dalapon was sprayed on the rye cover crop for quackgrass control approximately 2 weeks before plowing. The Wheeling gravelly loam soil had been planted to potatoes the preceding year. Seed were planted by machine 9.5 inches apart in 34-inch rows on April 12; all cut seed were treated with Polyram. Plots consisted of double rows 50 feet long, replicated 3 times. The soil was amended by banding 1150 lbs. per acre of 12-12-12 beside the rows; the systemic insecticide Di-Syston was also banded at planting as labelled. One gallon per acre of Eptam was incorporated for weed control. Fungicides and additional insecticides were added as needed during the season. Vines were shredded on August 7 and the plots were dug by machine on August 16 for a planting-to-harvest season of 126 days. Yields were calculated and tubers were examined, sized, and graded as described earlier.

### Results

Yield.--Both Shurchip and Abnaki produced over 400 cwt. per acre of marketable potatoes (Table 8). Shurchip has performed well at Marietta in previous year and also lead in yield in 1973. Abnaki, on the other hand, ranked only 12th of 13 cultivars in yield in 1973. Shurchip tubers were generally attractive with some unusually elongated for this variety. Skins were thick and slightly russeted. Kennebec was third in yield with 394 cwt., followed by Superior, 386; Norchip, 348; Katahdin, 332; Anoka, 331; and Seminole with 325 cwt. per acre of marketable potatoes. The remaining entries yielded less than 300 cwt. and York, only 158 cwt. Seminole, Wischip, Norland, and York have not been especially promising at Marietta. Penn 71 is also of doubtful commercial importance in the area.

Grades.--Grades ranged from 85.8 to 93.4 percent marketable. As usual, Kennebec produced the highest percentage of culls due to its tendency toward off-shapes and greening. With the exception of Kennebec, the 5 top-yielding varieties all produced more than 90 percent marketable potatoes. Tubers of Norland, York, Wischip, and Anoka tended to be small.

Stand.-- All varieties showed excellent survival with over 90 percent of the seedpieces producing plants, except for York which produced only an 83 percent stand. Ninety-eight percent of the Seminole seed sprouted and grew.

TABLE 8.--Yield, Grade, Percent Stand and Comments, Marietta Trials, 1974.

| Variety | Marketable Cwt./A | Percent Marketable | Percent B's | Percent Culls | Percent Stand | Percent Dead[1] | Comments |
|---|---|---|---|---|---|---|---|
| Shurchip | 418 | 90.8 | 4.6 | 4.6 | 94.7 | 95 | Att. Some longs. No disease. |
| Abnaki | 409 | 93.4 | 3.6 | 3.0 | 96.7 | 95 | Med.-large. Lge lent. No blight Avg. Shape. |
| Kennebec | 394 | 85.8 | 6.0 | 8.2 | 94.0 | 85 | Att. whiter than Kat. Some rgh. Lge. tubers. |
| Superior | 386 | 93.4 | 3.4 | 3.2 | 92.3 | 100 | Typical Sup. Med. to lge. Promising. |
| Norchip | 348 | 90.4 | 7.8 | 1.8 | 90.3 | 95 | Small tubers. |
| Katahdin | 332 | 90.2 | 6.8 | 3.0 | 90.7 | 95 | Very att. Smooth, white. |
| Anoka | 331 | 88.2 | 9.6 | 2.2 | 94.3 | 100 | Small. Resembles Abnaki. Sh.good. Low yields. |
| Seminole | 326 | 91.4 | 4.4 | 4.2 | 98.0 | 100 | Pink eyes, white skin. Lge. lent. Med. deep eyes. |
| Wischip | 282 | 89.6 | 9.6 | 0.8 | 93.3 | 100 | Russ. Resembles Shurchip. Good sh. Low yields. Small. |
| Penn 71 | 262 | 86.6 | 6.0 | 7.4 | 94.7 | 100 | Color sim. Kenn. Lge. tubers, flat. No promise. |
| Norland | 223 | 87.0 | 12.2 | 0.8 | 93.7 | 100 | Small, low yields. Sh, color are good. No promise. |
| York[2] | 158 | 88.8 | 9.2 | 2.0 | 83.0 | 100 | Good sh.but small. Netted skins. Low yields. |
| LSD .05 | 66 | 2.4 | 1.5 | 1.4 | 4.3 | --- | |

(1) Percent Vines dead when shredded on August 7.

(2) Planted two weeks late.

## MUCK CROPS POTATO VARIETY TRIALS--1974

Promising potato varieties are tested annually on organic soil at the Muck Crops Branch, Celeryville. Seven entries were evaluated in 1974:

| Early | Midseason-to-Late |
|---|---|
| Superior | Katahdin |
| Midseason | Kennebec |
| Norchip | Hudson |
| Shurchip | |
| Penn 71 | |

Varieties are characterized as to origin, disease resistance and other attributes in Table 1. In 1974 Superior was included as a comparison for early varieties and Katahdin for midseason-to-late varieties.

### Procedure

Seed were planted 11 inches apart in 34-inch rows by machine on April 30. Plots were single rows 25 feet long. Prior to planting, 800 lbs. per acre of 0-25-25 was broadcast and incorporated; sidedress nitrogen was not added due to excellent growth of the crop throughout the season. During July and the first three weeks of August the plots were irrigated at the rate of approximately 1 inch of water per week.

The systemic insecticide Thimet was banded at planting at 30 lbs. per acre of 10% granules. Sevin was applied weekly for control of potato beetles and Malathion and parathion were alternated for late season control of aphids. Dithane M-45 was applied weekly according to label directions after vines were 6-8 inches tall. Weeds were controlled by mechanical cultivation. The plots were dug by machine and the tubers were picked up by hand on September 30 after a season of about 153 days. A 50-lb. portion of the yield from each plot was used for sizing and grading on October 8. Specific gravities of U.S. No. 1 tubers were determined by the potato hydrometer method.

### Results

Yield.--Yields ranged from 420 cwt. per acre of U.S. No. 1 potatoes for Hudson to only 263 cwt. per acre for Norchip (Table 9). The early and midseason entries Superior, Norchip, Shurchip, and Penn 71 produced lower yields than did the later-maturing Hudson, Kennebec, and Katahdin. Shurchip has yielded relatively better on muck in past years than in 1974 (Table 10). Based on the poor performance of Shurchip in 1974, it seems likely that the hot, dry weather of July and early August may have reduced yields of early varieties despite the use of irrigation during this period.

Grade.--Not only did Hudson produce highest yields, but also the highest percentage of U. S. No. 1 tubers--94 percent. Between 80 to 85% of Norchip, Superior and Kennebec potatoes were graded U. S. No. 1 while the remaining varieties ranged from 85 to 90 percent U. S. No. 1.

Hudson tubers often tend to be overly large. However, as indicated by average weight per tuber, Kennebec tubers were slightly larger than those of Hudson--0.55 lb. vs. 0.51 lb. per tuber. Tubers of both Kennebec and Hudson were sutstantially

TABLE 9.--Yield, Grade, Tuber Size and Specific Gravity, Celeryville Potato Variety Trials, 1974.

| | Yield, cwt/A | | Grade, Percent | | | Avg. Tuber | Sp. |
|---|---|---|---|---|---|---|---|
| Cultivar | Total | U.S.No.1 | U.S.No.1 | B-Size | Culls | Wt.,lbs. | Grav. |
| Hudson | 457.3 | 429.2 | 93.7 | 2.2 | 2.0 | 0.51 | 1.073 |
| Kennebec | 496.6 | 404.2 | 81.7 | 3.8 | 7.8 | 0.55 | 1.075 |
| Katahdin | 419.9 | 373.3 | 88.7 | 6.6 | 3.0 | 0.33 | 1.073 |
| Shurchip | 410.1 | 369.0 | 90.0 | 5.7 | 3.0 | 0.36 | 1.068 |
| Penn 71 | 407.9 | 348.7 | 85.2 | 7.0 | 1.4 | 0.41 | 1.074 |
| Superior | 347.3 | 289.0 | 83.4 | 9.1 | 4.1 | 0.33 | 1.071 |
| Norchip | 315.5 | 264.0 | 84.0 | 7.1 | 4.2 | 0.32 | 1.074 |
| LSD .05 | 79.6 | 72.9 | 4.2 | 1.8 | 2.4 | 0.06 | 0.004 |

TABLE 10.--Average Yields of U.S. No.1 Potatoes in Cwt/A by Year. Muck Crops Potato Trials, 1969-1974.

| 1974 | 1973 | 1972 | 1971 | 1970 |
|---|---|---|---|---|
| Hudson, 429 | Katahdin, 264 | Hudson, 312 | Abnaki, 360 | Katahdin, 326 |
| Kennebec, 404 | Norchip, 231 | Shurchip, 309 | Shurchip, 328 | Superior, 264 |
| Katahdin, 373 | Shurchip, 262 | Abnaki, 302 | Norchip, 315 | Shurchip, 239 |
| Shurchip, 369 | Abnaki, 205 | Kennebec, 296 | Haig, 311 | Norchip, 217 |
| Penn 71, 348 | Onaway, 202 | Haig, 290 | Katahdin, 308 | |
| Superior, 288 | 6RF1, 201 | Katahdin, 270 | Superior, 159 | |
| Norchip, 263 | Kennebec, 156 | Norchip, 232 | | |
| | Hudson, 150 | Superior, 167' | | |
| | Superior, 109 | | | |
| | Penn 71, 98 | | | |
| Average 353 | 187 | 272 | 297 | 262 |

larger than the remaining varieties.

Specific Gravity.--Specific gravities were relatively high for most entries in 1974. Only Shurchip averaged below 1.070. Other varieties ran between 1.070 and the high of 1.075 for Kennebec.

Comments.--Based on yields and overall performance in 1974 and preceding years on both muck and mineral soil, it appears that Hudson is worthy of limited trial on muck for yield purposes. It is not considered a chipping variety. Although reports of cooking quality vary, most indicate it is excellent for tablestock uses. Hudson, formerly N.Y. 41, has outyielded all other entries in Ohio tests in the past 5 years. It tends to produce large tubers and may benefit from closer spacing. To date it has not shown unusual susceptibility to scab on muck in Ohio tests.

Kennebec yielded well in 1974, but may have been slightly more prone to scab than Katahdin. It ordinarily produces a high percentage of cull tubers due to excessive greening, off-shapes, and some field rots. Prior to 1974 Shurchip has been promising on muck. Tubers tend to be attractive but somewhat dark unless thoroughly washed. The scaly, slightly russeted skins are somewhat resistant to scab, but tend to trap muck particles.

Superior has consistently produced low yields in Ohio muck tests (Table 10) but remains a popular muck variety due to earliness and resistance to scab. Katahdin has been a consistent performer on muck in Ohio tests and ranked third in yield in 1974. It is widely grown on both muck and mineral soil.

## CHARACTERISTICS OF MAJOR CULTIVARS

Superior.-- Superior is a standard early cultivar in Ohio. It was released by Wisconsin in 1961 and is moderately resistant to common scab, but may be slightly susceptible to virus X, Fusarium wilt, and late blight. Due to its early maturity, Superior normally produces lower yields than Katahdin. Muck growers often plant Superior in preference to Katahdin, however, due to its better resistance to scab as well as earliness. Superior tubers are oval to oblong, generally smooth in shape and uniform in size, with light, flaky, russet skins. Tubers set deep on short rhizomes and do not green readily; skins toughen at an early stage of development. Superior is a multi-purpose early variety which chips and cooks moderately well. It is highly resistant to air pollution damage.

Shurchip.--Shurchip is a round russet which was released by Nebraska in 1969. It has yielded well in Ohio tests, generally ranking second only to Hudson. It is moderately resistant to common scab and tolerant to Fusarium and Verticillium wilts. It appears to be fairly susceptible to damage by air pollution. Tops are intermediate in size, spreading, and dark green. Shurchip tubers are similar in size to Katahdin, and are round to oblong with shallow eyes. Although it was released primarily for chipping purposes, Shurchip has become a popular tablestock variety in Ohio. It is somewhat slower-cooking than Katahdin and may be firmer when baked. Specific gravity is generally slightly higher than Katahdin.

Norchip.--Norchip was released by North Dakota in 1968. It is susceptible to late blight, Verticillium wilt, virus X and damage by air pollution, but is moderately resistant to common scab. Yields have been only average in Ohio. Tops mature early to midseason and are of medium size and grow upright. Tubers were smooth skinned and creamy white, with shallow eyes but deep bud ends. On heavy or poorly drained soils, Norchip is subject to growth cracks and off-shapes, with shouldering at the tuber ends. Tubers are generally round to oblong. This variety tends to set heavily and tubers often run small; consequently, wider spacing may be desirable. Norchip is equal to or better than Kennebec for chipping, especially from storage, and has higher solids. Although it is not considered a table stock variety, Norchip is finding its way into fresh market outlets.

Abnaki.--Abnaki was released by the USDA in 1971 in cooperation with New York and Maine. It is resistant to Verticillium wilt, leaf roll, mild mosaic and net necrosis due to leaf roll, and is more resistant to common scab than Katahdin. Foliage and tubers of Abnaki are said to be susceptible to late blight. Abnaki has yielded well in Ohio tests. However, large tubers are highly subject to hollow heart. Tubers are round, uniform in size and shape, and creamy white with shallow eyes. This variety is similar to Katahdin in specific gravity and processing and cooking qualities. However, it does not chip well from storage.

Penn 71.--Penn 71 was released as a chipping variety by the Pennsylvania Agricultural Experiment Station in 1971. It is said to chip better than Kennebec from $50^{\circ}$ F storage; Ohio tests have not completely borne this out, however. Penn 71 originated from a cross between Kennebec and Pennchip and tubers resemble those of Kennebec, being long, large, white and sometimes rough; however, tubers may be slightly flatter than Kennebec. Penn 71 has not been especially promising in Ohio from a yield standpoint. It matures slightly earlier than Katahdin and Kennebec. It is said to be resistant to late blight but susceptible to Verticillium wilt.

Katahdin.--Katahdin has been a standard midseason-to-late variety in Ohio for many years. It was released by the USDA in 1935 and is resistant to mild mosaic, moderately resistant to leaf roll, and immune to net necrosis and potato wart. It is widely adapted, yielding satisfactorily under a wide range of conditions. Tops are medium to large; tubers are elliptical to round, with shallow eyes and smooth, white skin. Katahdin is widely used as an all-purpose potato and is a leading variety for potato salads. It chips and fries satisfactorily from the field, but may not be the best choice for chipping from prolonged storage.

Kennebec.--Kennebec is a midseason variety released by the USDA in 1948. It is somewhat resistant to late blight, mild mosaic, net necrosis, and air pollution, but is susceptible to Verticillium wilt. Tops are large, vigorous, and upright. U.S. no. 1 yields are generally high despite low grades due to a tendency toward rough shapes, greening, and field rots. It is also subject to leak and pink-eye rot in storage. Tubers of Kennebec are white, smooth, and elliptical to oblong. It is an excellent general-purpose potato suitable for boiling, baking, frying or processing into chips. Kennebec is a very important chipping variety in Ohio despite its low solids. It is a good choice for chipping from storage.

Hudson.--Hudson, formerly NY 41, was released by New York in 1973. It is resistant to the golden nematode which has been a serious pest in New York but not in Ohio. It is similar to Katahdin for resistance to common scab, and intermediate between Kennebec and Katahdin for resistance to Verticillium wilt. It is said to be susceptible to late blight on foliage and tubers. In Ohio tests, Hudson has outyielded all other varieties on mineral soils, averaging 359 cwt. per acre of U.S. No. 1 potatoes in 4 years of testing. It also outyielded all others on muck at Celeryville in 1972 and 1974. Plants are large and spreading and compete effectively with weeds. Hudson tubers tend to be larger than those of Katahdin and sometimes rougher in shape but otherwise somewhat similar in appearance. Hollow heart has been almost non-existant in Ohio. Tuber skins are smooth and creamy, but some lenticel enlargment has been noted under wet conditions. Hudson appears to be an excellent table stock potato but is not suitable for chipping from storage. It is of higher specific gravity than Katahdin, tends to be somewhat mealier when cooked, and is said to be less subject to after-cooking darkening. Seed will be commercially available on limited quantities in 1975.

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VAN WERT
ALLEN
HARDIN
MERCER
AUGLAIZE
SHELBY
LOGAN
UNION
DARKE
CHAMPAIGN
MIAMI
CLARK
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BUTLER
WARREN
CLINTON
HAMILTON
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ASHTABULA
SUMMIT
PORTAGE
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TRUMBULL
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STARK
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